

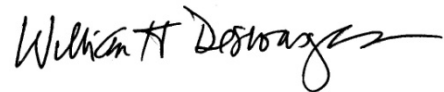
**Expert Report of William H. Desvousges, Ph.D.
in the Matter of
*Harris County v. International Paper Company,
et al. (Harris County District Court Case No. 2011-
76724); Dao Van Pho, et al. v. International Paper
Company, et al. (Harris County District Court
Case No. 2012-58016); Jim Harpster, et al. v.
International Paper Company, et al. (Harris
County District Court Case No. 2012-66308)***

Final Report

Prepared for:

International Paper Company

Prepared by:



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August 15, 2013

1. INTRODUCTION AND SUMMARY OF OPINIONS

I have been asked by a defendant, International Paper Company, to provide expert opinions on whether damages to human health, fish, and recreation uses claimed by the plaintiff, Harris County, would constitute a natural resource damage claim. In preparing my opinions, I am relying on my academic training, professional experience, and various writings that I have published on natural resource damage assessment (NRDA) and, in particular, the components of potential damages from an economist's perspective. I have reviewed the second amended petition, as well as expert reports provided by the various witnesses retained by the plaintiffs. I have also reviewed several remedial investigation documents and summaries of various damage assessments conducted by the State of Texas either separately, or in conjunction with Federal Trustees. I have reached my opinions to a reasonable degree of scientific certainty. This report and my opinions stated in this report are based on the information that I have reviewed to date. I reserve the right to amend or supplement this report and my opinions should new information become available.

Based on my review of the various materials, I have concluded there is a well-established process for recovering potential natural resource damage claims. The plaintiff's claims for losses from injuries to fish and other natural resources and from human health risks and lost recreational uses would be addressed as either part of the CERCLA remedial process and/or the NRDA process. This process has been designed to minimize risks to people and the environment and to provide appropriate compensation for the injuries to natural resources or the services they provide. The Trustees of the State of Texas are well versed in conducting such damage assessments.

2. SUMMARY OF QUALIFICATIONS

I have conducted economic valuation studies (especially environmental) for more than 25 years. (A complete resume is included in Appendix A.) I specialize in NRDA, having worked on more than 35 assessments since 1987. I have led major damage assessments for the hazardous-substance releases into the Clark Fork River (MT), Lavaca Bay (TX), and Fox River (WI). Other major assessments include: Shell

Martinez spill, Exxon Valdez spill, Housatonic River, Saginaw Bay and River, and South Valley.¹

I have conducted several assessments that have involved the use of habitat equivalency analysis (HEA) and have conducted assessments that assessed potential recreational losses from fish consumption advisories and fishing closure areas.

I was also admitted as an expert in measuring natural resource damages in federal court and have been qualified as an expert on NRDA and natural resource economics in both Federal and State Courts, including the States of New Jersey and Massachusetts.

I have been actively involved in the regulatory process for NRDA beginning with my co-authorship of the economics handbook for the Department of Interior (DOI) NRDA regulations. I have prepared comments on all proposed regulatory changes on behalf of various clients. I have also participated in numerous NRDA seminars over the past 20 years.

Finally, I have written extensively in the peer-reviewed literature on issues related to measuring natural resource damages having co-authored four books and more than sixty articles in peer-reviewed journals. I have served as a peer reviewer for several economics journals as well as the Environmental Protection Agency and the National Science Foundation.

I have a B.A. in Economics from Stetson University and a M.S. and Ph.D. from Florida State University. I have held various academic positions during the past 25 years. I am currently founder and President of W.H. Desvousges & Associates, Inc., which is located in Raleigh N.C.

¹ The natural resource damages to groundwater at South Valley were at issue in the seminal decision of *New Mexico v. General Electric Company*, which established a number of fundamental principles for evaluating natural resource damage claims. See 467 F.3d 1223 (10th Cir. 2006) (holding that natural resource damages are not recoverable unless services provided by natural resources have been lost).

3. THERE IS A WELL-ESTABLISHED PROCESS FOR RECOVERING NATURAL RESOURCE DAMAGES

The plaintiff in this case has alleged the citizens of Harris County cannot feel secure while swimming in the San Jacinto River, nor can they trust the fish or shellfish they catch are safe to eat. They also allege that citizens can no longer enjoy camping, or picnicking near the San Jacinto River (Second Amended Petition). However, such concerns are well within the scope of the NRDA process. In particular, the Department of the Interior (DOI) promulgated regulations that provide a methodology and process for recovering damages to natural resources in 1986 (43 CFR Part 11). These regulations were amended most recently in 2008. Although not mandatory, if Trustees for natural resources follow the DOI regulations, they are entitled to a rebuttable presumption.

Moreover, the State of Texas has enacted legislation, the Texas Oil Spill Prevention and Response Act (1991) that provides for the recovery of damages to natural resources. The Texas Trustee agencies include the Texas Commission on Environmental Quality (TCEQ), the Texas General Land Office, and the Texas Parks and Wildlife Department (TPWD). These agencies also have signed a memorandum of agreement as to how they will participate in a NRDA (Texas Natural Resource Conservation Commission, et al. 1995). The State of Texas has been one of the most active State Trustees in conducting NRDA's, especially cooperative assessments that engage both potentially responsible parties and the Trustees to resolve claims in an efficient manner. The TCEQ website indicates that 41 NRDA's have been completed, with 4 more pending final settlements. The website also indicates that an additional 43 cases are ongoing. The restoration accomplishments include constructing 735 acres of estuarine wetlands, enhancing an additional 2,165 acres, and acquiring 322 acres.² One of the most notable cooperative assessments involved the Lavaca Bay site along the Texas Gulf Coast (Texas General Land Office, et al. 2001a,b). This settlement resulted in both the restoration of recreation uses through the construction of piers and ramps and the enhancement of wetlands and oyster reefs. Other notable NDRAs in Texas include Greens Bayou (NOAA, et al. 2008), Chevron Port Arthur (NOAA, et al. 2004), and Apex Galveston Bay (Texas General Land Office, et al. 1997).

² <http://www.tceq.state.tx.us/remediation/nrtp/nrtp.html>

In addition, the CERCLA remedial process is intended to minimize risks to human health and the environment. The defendant, International Paper Company, and one other defendant in this case, are conducting a remedial investigation and a feasibility study (RI/FS) for the San Jacinto River Waste Pits Superfund Site (Site) (Integral and Anchor 2013). This study will provide essential information that will enable Federal and State environmental regulators to make critical risk management decisions involving the cleanup of the Site (Integral and Anchor 2013). Representatives of the State Trustee agencies have reviewed documents as part of the CERCLA process (Integral and Anchor 2013). Thus, they are familiar with the data that have been collected as part of this process and would be in a position to be able to use it, at least in part within the NRDA process. Similarly, in the Lavaca Bay NRDA process, the Trustees were able to leverage data from the RI process supplemented with additional information that was specifically designed for the NRDA.

Moreover, International Paper Company and another defendant also have conducted a time critical removal action to speed up the clean up process while the final remedy is being selected. This removal action included stabilizing waste impoundments to withstand the forces of the river, preventing direct human contact, and preventing benthic contact with the waste materials (Integral and Anchor 2013).

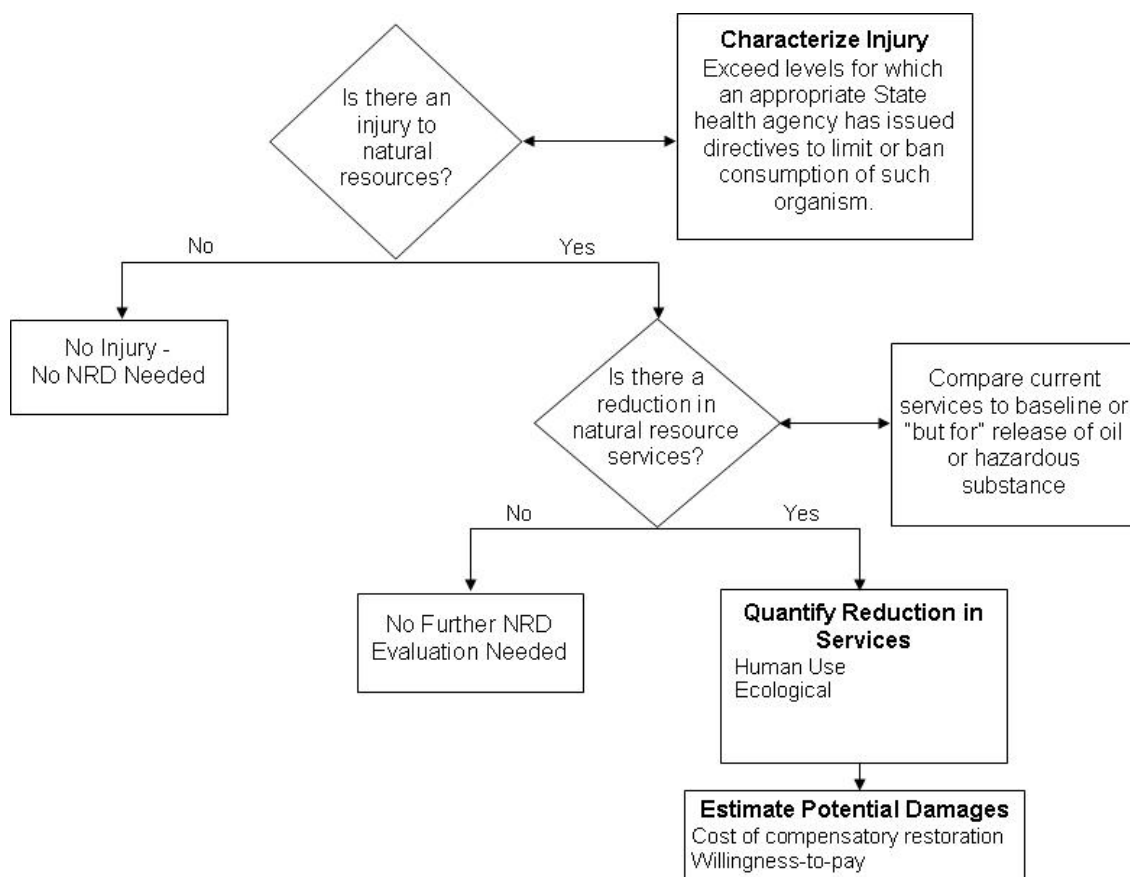
Finally, the Texas Department of State Health Services (TDSHS) has implemented consumption advisories on fish and shellfish in the vicinity of these sites to further lessen the risks from consumption of contaminants (TDSHS 1990, 2005, 2013). This cleanup process and institutional controls provides an essential baseline for evaluating whether or not natural resource damages may have occurred at the Site.

However, before describing the NRDA process, it is important to recognize that the concepts of cleanup and natural resource damages are inextricably linked. Specifically, the type and extent of cleanup will directly affect the type and extent, if any, of the residual injury to natural resources that may remain after cleanup is completed. Figure 1 illustrates this linkage. As shown in Figure 1, it is only after cleanup and remediation has occurred that it can be determined whether or not there has been any residual injury to a particular natural resource. The extent and timing of cleanup also influences the magnitude of interim natural resource service losses.

According to the 43 Part 11 regulations, Trustees at their discretion also may choose to recover for natural resource service losses that occur from the time of the passage of CERCLA in December 1980 to the time that injured resources have returned to their baseline levels. Thus, the NRDA process is designed to address the residual injury after CERCLA is complete and any losses that may occur during the time that a site is being cleaned up. I will explain these concepts more fully below.

As Figure 1 shows, the first step in the NRDA process is to determine whether there has been an injury to natural resources. This step is the province of ecotoxicologists or other injury specialists who can follow the guidance in 43 CFR Part 11.61. The guidance also identifies per se injuries, such as fish and shellfish consumption advisories, similar to those that the State of Texas has imposed to limit risks from consuming fish and shellfish in the San Jacinto River, Houston Ship Channel and portions of Galveston Bay.

Figure 1: NRD Principles and Decision Process



The next crucial step that arises in a damage assessment is service quantification, which usually involves the collaboration of economists and ecologists and other scientists.³ Specifically this step:

Establishes the extent of the injury to the resource in terms of the loss of services that the injured resource would have provided had the discharge or release not occurred.

Once it has been established that an injury has occurred, the loss in natural resource services is measured relative to the level of services that would have been provided had the discharge or release of hazardous substance not occurred. The level of services that would have been provided without the release is known as the baseline level of services. In economic analysis, baseline is often specified as the condition of a resource, measured in terms of service flows, but for the release or discharge.⁴ The economic definition holds constant all other factors that might influence the value of the resources except the release. As such, it distinguishes between the services that are found merely after a release has occurred and the change services that can be attributed to the release itself.

Once the loss in services has been quantified, it is necessary to determine the value of those services. The potential service losses in a NRDA include both use services, such as fishing and boating, and ecological services that one resource provides for another, and ultimately benefit the public. In this situation, the Federal and State Trustees will evaluate whether there has been a loss in human use and ecological services (Figure 2). As shown in Figure 2, these services may give rise to both use and nonuse values. Use values are those that derive from people's use of the resource such as fishing, birdwatching and the like. In addition, natural resources also may yield values that are independent of any access, which are also known as nonuse values. Such values are often associated with unique natural resources or with services that one resource provides to another. These values also are the subject of considerable controversy because of concerns over the reliability of measurement (Arrow, et al. 1993; Diamond and Hausman 1994; Hausman 2012). Because of this

³ See 43 CFR Part 11 for a more complete discussion of service quantification in a damage assessment.

⁴ USEPA (2010) provides a thorough discussion of the role of baseline in economic analysis applied to environmental regulations.

controversy, Trustee agencies have turned to alternative approaches of compensation that indirectly measure the value of resource services.

There are a variety of methods that can be used to quantify the loss in human use services. For recreational services, a special type of recreational choice model can be used to determine the extent to which people's recreational uses have been affected by fish consumption advisories. The Trustees used this type of model in the Lavaca Bay assessment to determine amount of restoration actions, such as piers and boat ramps, that would be needed to offset the losses from an area that was closed to fishing because of increased mercury concentrations (Texas General Land Office, et al. 2001a,b). I have also used a similar model to assess the potential losses in the Fox River and Green Bay, Wisconsin (MacNair and Desvousges 2007).

One of the more widely used methods for addressing ecological services, especially in cooperative NRDAs, is habitat equivalency analysis (HEA). The HEA method does not require one to determine whether the values being measured are use or nonuse values. It focuses on the ecological services at a site. HEA relies upon an implicit equivalency in value, regardless of their source, between the potentially affected resource services and the compensatory services being provided. As long as this equivalency holds, the values cancel out of the calculation and only the discounted stream of services needs to be quantified. The quantified services are multiplied by the correctly-sized restoration project to obtain the calculated damages. The Trustees used the HEA approach to address potential losses in ecological services in Lavaca Bay (Texas General Land Office, et al. 2001a,b).

Figure 2: Natural Resource Services/Valuation Taxonomy for NRDAs

	Use Values	Nonuse Values
Use Services	Fishing, boating	Option and existence of recreation uses
Ecological Services	Nature viewing	Habitat and food provision

Figure 3 provides additional information on the idea of project-based restoration, such as HEA. For example, Figure 3 shows that a combination of primary restoration (i.e., remediation) and natural recovery will return services to the baseline level. Additionally, new restoration projects, also called compensatory restoration, are used to offset the services lost during the interim period between the onset of service losses and the completion of primary restoration. This is the relevant period for potential damages in this case.

Moreover, as shown in Figure 3, the concepts of primary and compensatory restoration are closely linked. From an economic perspective, it only makes sense to undertake primary restoration if two conditions are met. First, such actions must be able to restore services to baseline faster than they would under natural recovery. And, secondly, the cost of such restoration must be less than the cost of the reduced amount of compensatory restoration. For example, suppose primary restoration that might involve removing oil from a wetland area were to cost \$1 million dollars and would restore wetland services to baseline levels three years faster than natural recovery. Suppose also that the additional compensatory restoration actions to provide those three years of wetland services would cost \$2.5 million dollars. Under this scenario, undertaking the primary restoration would make sense. By the same token, if the costs were reversed, society would be better off by increasing the amount of compensatory restoration and forgoing primary restoration.

Also, as shown in Figure 3, the compensatory restoration projects may be undertaken either onsite or offsite. The objective is to determine the size of the restoration project that would equate Area X and Area Y. A key step in this process is to equate the flow of services from the restoration project to the cumulative stock of services that were lost. The economic concept of discounting is used to complete this translation as a stream of future services is discounted to equal the lost services. Three percent is the discount rate that is conventionally used (NOAA 1999; 15CFR990.63; 43CFR11.84). This rate also is consistent with economic principles of discounting, which are based on the rate of time preference (USEPA 2010). Under this approach, damages are based on the cost of the properly sized restoration project, not the value of the services provided by the project.

Figure 3

(from NOAA Coastal Services Center: <http://www.csc.noaa.gov/coastal/economics/habitategu.htm>)

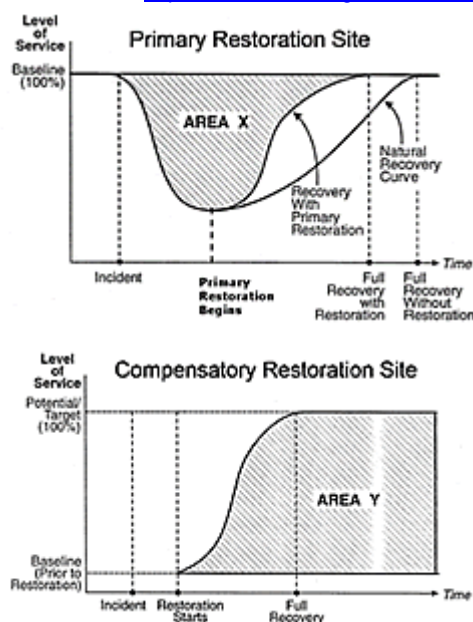


Figure 3. Interim losses of services (X) at the primary restoration site and the corresponding required level of services gained (Y) at the compensatory restoration site (from King 1997).

In summary, HEA addresses ecological services that one resource provides to another in a NRDA. This method, when properly applied, and if the underlying economic assumptions are met, can provide a reliable measure of potential damages. In effect, this method determines properly-scaled compensatory restoration projects that would offset the potential losses in ecological services associated with hazardous substance releases from the Site. Well-established methods also are available to quantify losses in human uses such as recreation. It is my opinion that the NRDA process provides a mechanism to address both the past and the future service losses that would result from natural resource injuries and service losses related to the Site. This mechanism would include any types of values that people would hold for these natural resources or their services.

Moreover, the CERCLA cleanup and NRDA processes that I have described in this report would address the claims made by plaintiff in the Second Amended Petition for losses attributable to fish and shellfish consumption advisories, as well as concerns about the loss of various recreation uses. The RI/FS will provide the information

necessary for risk managers to make final remedial decisions that are protective of human health and the environment beyond the steps already taken by International Paper Company and one other defendant in the time critical removal actions.

Finally, the Trustee agencies in the State of Texas have demonstrated an extensive track record for conducting NRDAs, which have resulted in substantial amounts of restoration activities to benefit the Texas citizens. These Trustee agencies have worked with other Federal Trustees and many potentially responsible parties to conduct NRDAs in a cost-effective and timely manner to address injuries to human uses and the environment that are in addition to the CERCLA remedial process. Such assessments also cover potential human use and ecological service losses that may have occurred during the interim period of time between a release and the return to baseline conditions.

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Appendix A
Resume of William H. Desvousges, Ph.D.

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Employment Chronology

2005 to date	President W.H. Desvousges & Associates, Inc.
1994 to 2005	President Triangle Economic Research Durham, NC
1996 to 1999	Research Professor Duke University Durham, NC
1989 to 1994	Program Director/Senior Program Director Center for Economics Research Research Triangle Institute Research Triangle Park, NC
1980 to 1989	Senior Economist Center for Economics Research Research Triangle Institute Research Triangle Park, NC
1975 to 1980	Assistant/Associate Professor Department of Economics University of Missouri at Rolla Rolla, MO
1986	Visiting Lecturer Meredith College Raleigh, NC
1984 to 1985	Visiting Lecturer University of North Carolina at Chapel Hill Chapel Hill, NC
1980 to 1984	Visiting Lecturer North Carolina State University Raleigh, NC

Education

Ph.D., 1977, Economics, Florida State University, Tallahassee, Florida

M.S., 1974, Economics, Florida State University, Tallahassee, Florida

B.A., 1972, Economics, Stetson University, Deland, Florida

Key Projects

- Use of habitat equivalency analysis in Grand River Ditch damage assessment (Water Supply and Storage Company)
- Use and critique of habitat equivalency analysis for petroleum refinery sites (confidential client)
- Services-based critiques of various groundwater damage assessments in New Jersey (ExxonMobil, Dow Chemical, and others)
- Critique of Trustee contingent valuation study of alleged aesthetic and ecological injuries in the Illinois River Watershed (Tyson Foods, Inc.)
- Assessment of potential recreation use losses in Illinois River Watershed (Tyson Foods, Inc.)
- Critique of the use of habitat equivalency analysis for historical mining site (Confidential Client)
- Prepared alternative natural resource damage estimates for key mining and smelting sites (ASARCO, Inc.)
- Conducting human use service assessment for cooperative damage assessment for Ottawa River (GenCorp, Inc.)
- Groundwater damages at the South Valley Superfund Site in New Mexico (General Electric Company)
- Evaluation of the use of survey methods by appraisers to value a commercial property (ChevronTexaco)
- Evaluation of the use of contingent valuation surveys to measure diminished property values in Mississippi (confidential client)
- Evaluation of market and survey-based methods for measuring damages from underground storage tanks (USTs) to both residential and commercial properties (confidential client)

- The role of individual factors in using market and survey-based methods for measuring potential damages to classes of residential properties in Colorado Springs, Colorado (Davis Graham Stubbs)
- The role of individual factors in using market and survey-based methods for measuring both residential and commercial properties in Oklahoma (confidential client)
- The reliability of survey and market-based methods for measuring damages from increased eutrophication in lakes (confidential clients)
- Comments on the benefit estimates of EPA's proposed Phase II 316(b) Rule (The Utility Water Act Group)
- Benefit-cost analysis of various regulatory alternatives for 316(b) compliance in Connecticut" (confidential client)
- Benefit-cost analysis of 316(b) regulatory alternatives in California (confidential client)
- Creel/angler survey on the Lower Passaic River (Tierra Solution)
- Human use compensatory restoration strategy for Onondaga Lake (Honeywell International)
- Review of New Jersey's groundwater damage assessment formula (New Jersey Site Remediation Industry Network)
- Environmental costs for particulate matter and mercury: an assessment of the recent literature (Xcel Energy)
- NRDA for a major waterway in the Northeast (confidential client)
- Alternative Santa Clara River HEA (confidential client)
- Saginaw Bay and River natural resource damage assessment (General Motors)
- Evaluating the reliability of contingent valuation (U.S. Environmental Protection Agency)
- Measuring environmental costs for resource planning (Northern States Power Company)
- Natural resource damage assessment for Lavaca Bay, Texas (Alcoa)
- Natural resource damage assessment for the Clark Fork Basin in Montana (ARCO)
- Using conjoint analysis to value health (Health Canada et al.)
- Wisconsin Energy Research Project (consortium of Wisconsin utilities)

- Estimating the market potential for 'green' products (Niagara Mohawk)
- Fox River natural resource damage assessment (Fox River Group)
- Kalamazoo River natural resource damage assessment (Kalamazoo River Study Group)
- St. Lawrence River-Massena natural resource damage assessment (Reynolds, Alcoa, General Motors)
- Wisconsin externalities costing: principles & practices (Task Force on Externality Costing, Wisconsin utilities)
- Measuring benefits of the effluent guidelines: an evaluation of the benefits transfer technique (Office of Science and Technology, U.S. Environmental Protection Agency)
- Information, risk perception, and mitigation: behavioral responses to environmental risk (National Science Foundation)
- Natural resource damage assessments for the Martinez, California; Gasconade River, Missouri; and Arthur Kill, New Jersey Oil Spills (various clients)
- Communicating risk effectively (Office of Policy Planning and Evaluation, U.S. Environmental Protection Agency)
- Valuing reductions in hazardous waste risks (Office of Policy Analysis, U.S. Environmental Protection Agency)
- Evaluating risks of a high-level nuclear waste repository (State of Nevada)
- A comparison of benefit estimation approaches (Office of Policy Analysis, U.S. Environmental Protection Agency)

Expert Reports

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FOODS INC., and WILLOW BROOK FOODS, INC., Defendants. Case No. 05-CV-329-GKF-PJC. March 31, 2009.

- Report prepared in Response to Request for Comments on Regulatory Review Alternatives: The Value of Cost-Benefit Analysis. Utility Water Act Group. March 31, 2009.
- Expert report in the Matter of *Robert C. Brandriff, et al. v. Dataw Island Owners' Association, Inc., et al.* Civil Action No. 9:07-3361-CWH. December 1, 2008.
- Affidavit of William H. Desvousges, Ph.D. in the Matter of *Jeff Alban, et al. v. ExxonMobil Corporation, et al.* Submitted to the In Circuit Court for Baltimore County. Case No.:03-C-06-010932
- Affidavit of William H. Desvousges, Ph.D. in Support of Defendants' Opposition to Motion for Class Certification in the Matter of *Murray Gintis, Victoria Gintis and Claudia Martin on behalf of themselves and all others similarly situated v. Bouchard Transportation Company, Inc., Tug Evening Tide Corporation and B. NO. 120 Corporation.* Submitted to the United States District Court for the District of Massachusetts. Civil Action No. 06-10747-JLT. July 29.
- Expert Report of William H. Desvousges, Ph.D. Submitted in Support of Defendants' Opposition to Plaintiffs' Motion for Partial Summary Judgment in the Matter of *Murray Gintis, Victoria Gintis and Claudia Martin on behalf of themselves and all others similarly situated v. Bouchard Transportation Company, Inc., Tug Evening Tide Corporation and B. NO. 120 Corporation.* July 10.
- Rebuttal Expert Report of William H. Desvousges, Ph.D. in the Matter of *USA v. Water Supply & Storage.* October 24, 2007.
- Expert Report of William H. Desvousges, Ph.D. in the Matter of *USA v. Water Supply & Storage.* September 27, 2007.
- Expert Reports in the Matter of *Official Committee of Unsecured Creditors v. ASARCO LLC (In re ASARCO LLC), Case No. 05-21207.*
 - Estimate of Environmental Liabilities. California Gulch Superfund Site. Leadville, Colorado. Prepared by ENVIRON International Corporation, Chicago, Illinois and W.H. Desvousges & Associates, Inc. Raleigh, North Carolina. On behalf of ASARCO Incorporated. May 4, 2007.
 - Estimate of Environmental Liabilities. Bunker Hill Superfund Facility/Coeur d'Alene Basin. Idaho/Washington. Prepared by ENVIRON International Corporation Chicago, Illinois and W.H. Desvousges & Associates, Inc. Raleigh, North Carolina. On behalf of ASARCO Incorporated. June 15, 2007.

- Estimate of Environmental Liabilities. Tacoma Smelter Site. Tacoma, Washington. Prepared by ENVIRON International Corporation Chicago, Illinois and W.H. Desvousges & Associates, Inc. Raleigh, North Carolina. On behalf of ASARCO Incorporated. June 15, 2007.
- Estimate of Environmental Liabilities. Everett Smelter Site. Everett, Washington. Prepared by ENVIRON International Corporation Chicago, Illinois and W.H. Desvousges & Associates, Inc. Raleigh, North Carolina. On behalf of ASARCO Incorporated. June 15, 2007.
- Rebuttal Expert Report. California Gulch Superfund Site. Leadville, Colorado. Prepared for Milbank, Tweed, Hadley & McCloy LLP. On behalf of ASARCO Incorporated. Prepared by ENVIRON International Corporation Chicago, Illinois and W.H. Desvousges & Associates, Inc. Raleigh, North Carolina. June 22, 2007.
- Estimate of Environmental Liabilities. Nueces Bay/Corpus Christi Bay. Corpus Christi, Nueces County, Texas. Prepared by ENVIRON International Corporation St. Peters, Missouri and W.H. Desvousges & Associates, Inc. Raleigh, North Carolina. On behalf of ASARCO Incorporated. July 27, 2007.
- Estimate of Environmental Liabilities. Big River Mine Tailings and Federal Mine Tailings Sites. St. Francois County, Missouri. Prepared by ENVIRON International Corporation St. Peters, Missouri and W.H. Desvousges & Associates, Inc. Raleigh, North Carolina. On behalf of ASARCO Incorporated. July 27, 2007.
- Estimate of Environmental Liabilities. Catherine Mine Site/Madison County Mines Site. Madison County, Missouri. Prepared by ENVIRON International Corporation St. Peters, Missouri and W.H. Desvousges & Associates, Inc. Raleigh, North Carolina. On behalf of ASARCO Incorporated. July 27, 2007.
- Estimate of Environmental Liabilities. Glover Lead Facility. Glover, Missouri. Prepared by ENVIRON International Corporation St. Peters, Missouri and W.H. Desvousges & Associates, Inc. Raleigh, North Carolina. On behalf of ASARCO Incorporated. July 27, 2007.
- Estimate of Environmental Liabilities. Sweetwater Mine Site. Reynolds County, Missouri. Prepared by ENVIRON International Corporation St. Peters, Missouri and W.H. Desvousges & Associates, Inc. Raleigh, North Carolina. On behalf of ASARCO Incorporated. July 27, 2007.
- Estimate of Environmental Liabilities. West Fork Mine Site. Reynolds County, Missouri. Prepared by ENVIRON International Corporation St. Peters, Missouri and W.H. Desvousges & Associates, Inc. Raleigh, North Carolina. On behalf of ASARCO Incorporated. July 27, 2007.

- Estimate of Environmental Liabilities. Tar Creek Site. Ottawa County, Oklahoma. Prepared by ENVIRON International Corporation St. Peters, Missouri and W.H. Desvousges & Associates, Inc. Raleigh, North Carolina. On behalf of ASARCO Incorporated. July 27, 2007.
- Estimate of Environmental Liabilities. Cherokee County Superfund Site. Cherokee County, Kansas. Prepared by ENVIRON International Corporation St. Peters, Missouri and W.H. Desvousges & Associates, Inc. Raleigh, North Carolina. On behalf of ASARCO Incorporated. July 27, 2007.
- Estimate of Environmental Liabilities. Newton County Mine Tailings Site. Newton County, Missouri. Prepared by ENVIRON International Corporation St. Peters, Missouri and W.H. Desvousges & Associates, Inc. Raleigh, North Carolina. On behalf of ASARCO Incorporated. July 27, 2007.
- Estimate of Environmental Liabilities. Jasper County Superfund Site. Jasper County, Missouri. Prepared by ENVIRON International Corporation St. Peters, Missouri and W.H. Desvousges & Associates, Inc. Raleigh, North Carolina. On behalf of ASARCO Incorporated. July 27, 2007.
- Rebuttal Expert Report. Bunker Hill Superfund Facility/Coeur d'Alene Basin. Idaho/Washington. Prepared for Milbank, Tweed, Hadley & McCloy LLP. On behalf of ASARCO Incorporated. Prepared by W.H. Desvousges & Associates, Inc. Raleigh, North Carolina. August 10, 2007.
- Rebuttal Expert Report. Tacoma Smelter Site. Tacoma, Washington. Prepared for Milbank, Tweed, Hadley & McCloy LLP. On behalf of ASARCO Incorporated. Prepared by ENVIRON International Corporation Chicago, Illinois and W.H. Desvousges & Associates, Inc. Raleigh, North Carolina. August 14, 2007.
- Rebuttal Expert Report. Nueces Bay/Corpus Christi Bay Corpus Christi, Nueces County, Texas. Prepared for Milbank, Tweed, Hadley & McCloy LLP. On behalf of ASARCO Incorporated. Prepared by W.H. Desvousges & Associates, Inc. Raleigh, North Carolina. September 17, 2007.
- Rebuttal Expert Report. Tri-State Sites. Prepared for Milbank, Tweed, Hadley & McCloy LLP. On behalf of ASARCO Incorporated. Prepared by W.H. Desvousges & Associates, Inc. Raleigh, North Carolina. September 17, 2007.
- Rebuttal Expert Report. East Helena Superfund Site, East Helena, Montana. Prepared for Milbank, Tweed, Hadley & McCloy LLP. On behalf of ASARCO Incorporated. Prepared by W.H. Desvousges & Associates, Inc. Raleigh, North Carolina. November 2, 2007.

- Expert Report in the Matter of *New Jersey Department of Environmental Protection and Acting Administrator, New Jersey Spill Compensation Fund v. Higgins Disposal, et al.* March 16, 2006.
- Expert Report in the Matter of *New Jersey Department of Environmental Protection and Acting Administrator, New Jersey Spill Compensation Fund v. Exxon Mobil Corporation, et al.* March 3, 2006.
- Expert Affidavit of William H. Desvousges In Support Of Defendant's Opposition To Plaintiffs' Motion For Partial Summary Judgment in the Matter of *New Jersey Department of Environmental Protection and Administrator New Jersey Spill Compensation fund v. Exxon Mobil Corporation.* February 17, 2006.
- Expert Report in the Matter of *Fisher, et al. v. Ciba Corporation.* February 15, 2006.
- Expert Report in the Matter of *Perrine, et al. v. E.I. DuPont De Nemours and Company, et al.* February 3, 2006.
- Expert Report in the Matter of *Estate of David Hill, et al. v. Koppers Industries, Inc., et al.* January 26, 2006.
- Second Expert Report in the Matter of *Allgood, et al. v. General Motors Corporation.* September 29, 2005.
- Expert Report in the Matter of *Jackson, et al. v. Johnson Electric Automotive, Inc., et al.* August 15, 2005.
- Expert Report in the Matter of *Beck, et al. v. Koppers Industries, Inc., et al.* August 1, 2005.
- Declaration of William H. Desvousges, Ph.D. Pursuant to 28 U.S.C. § 1746. April 15, 2005.
- Supplemental Report in the Matter of *Palmisano, et al. v. Olin Corporation.* February 7, 2005.
- Expert Report in the Matter of *Allgood, et al. v. General Motors Corporation.* January 17, 2005.
- Expert Report in the Matter of *LaBauve, et al. v. Olin Corporation.* December 10, 2004.
- Expert Report in the Matter of *Cole, et al. v. ASARCO, et al.* August 23, 2004.
- Expert Report in the Matter of *Daniels, et al. v. Olin Corporation.* August 16, 2004.
- Expert Report in the Matter of *Kellum, et al. v. Kuhlman Corporation, et al.* July 2003.

- Expert Report in the Matter of *Susann Stalcup, et al. v. Schlage Lock Company, et al.* April 1, 2003.
- Expert Report in the Matter of *Muise/Tzannetakis, et al. v. GPU Energy.* December 2, 2002.
- Expert Report in the Matter of *State of New Mexico v. General Electric Company, et al.* February 1, 2002.
- Expert Report in the Matter of *Major Andrews, et al. v. Kerr-McGee Corporation, Inc., et al.* June 29, 2001.
- Expert Report: *Volume I: Critique of the State of Montana's Contingent Valuation Study.* 1995. Submitted to United States District Court, District of Montana, Helena Division in the Matter of *State of Montana v. Atlantic Richfield Company.* Case No. CV-83-317-HLN-PGH.
- Expert Report: *Volume II: Critique of the State of Montana's Recreation Study.* 1995. Submitted to United States District Court, District of Montana, Helena Division in the Matter of *State of Montana v. Atlantic Richfield Company.* Case No. CV-83-317-HLN-PGH.
- Expert Report of William H. Desvousges and Steven M. Waters: *Volume III: Report on Potential Economic Losses Associated with Recreation Services in the Upper Clark Fork River Basin.* 1995. Submitted to United States District Court, District of Montana, Helena Division in the Matter of *State of Montana v. Atlantic Richfield Company.* Case No. CV-83-317-HLN-PGH.
- Expert Report: *Volume IV: Critique of the State of Montana's Groundwater Valuation.* 1995. Submitted to United States District Court, District of Montana, Helena Division in the Matter of *State of Montana v. Atlantic Richfield Company.* Case No. CV-83-317-HLN-PGH.
- Expert Report: *Volume V: Report on Potential Economic Losses Associated with Groundwater.* 1995. Submitted to United States District Court, District of Montana, Helena Division in the Matter of *State of Montana v. Atlantic Richfield Company.* Case No. CV-83-317-HLN-PGH.
- Expert Report of William H. Desvousges and Steven M. Waters: *Volume VI: Additional Economic Critique of the State of Montana's Damage Estimates.* 1995. Submitted to United States District Court, District of Montana, Helena Division in the Matter of *State of Montana v. Atlantic Richfield Company.* Case No. CV-83-317-HLN-PGH.

Testimony

Provided expert witness testimony in the Matter of the *New Jersey Department of Environmental Protection, Commissioner of the New Jersey Department of Environmental Protection and the Administrator of the New Jersey Spill Compensation Fund v. Atlantic Richfield Company, et al.* May 7 and 8, 2013.

Provided expert witness deposition telephonic deposition in the *Matter of Betty Jean Cole, et al. v. Asarco Incorporated, et al.* September 8, 2011.

Provided expert witness testimony In the *Matter of New Jersey Department of Environmental Protection, et al. v. Union Carbide Corporation, et al.* October 2010.

Provided expert witness deposition testimony In the *Matter of New Jersey Department of Environmental Protection, et al. v. Union Carbide Corporation, et al.* September 9, 2010.

Provided expert witness deposition testimony in the Matter of *The Quapaw Tribe of Oklahoma, et al. v. Blue Tee Corp, et al.* The United States District Court For The Northern District Of Oklahoma. Case No. 03-CV-0846-CVE-PJC. June 29, 2010.

Provided expert witness testimony in the Matter of *DeLeo, et al. v. Bouchard Transportation Co., et al.* March 30, 2010.

Provided expert witness testimony in the Matter of *New Jersey Department of Environmental Protection, et al. v. Essex Chemical Corporation.* Superior Court of New Jersey Law Division - Middlesex County Docket No: MID-L-5685-07. March 25, 2010.

Provided expert witness telephonic deposition testimony in the Matter of *Abrams, et al. v. Ciba Specialty Chemicals Corp, et al.* The United States District Court Southern District Of Alabama. CASE NO. 08-68-WS-B. St. Augustine, FL. June 15, 2009.

Provided expert witness deposition testimony in the Matter of *STATE OF OKLAHOMA, ex. rel. W.A. DREW EDMONDSON, in his capacity as ATTORNEY GENERAL OF THE STATE OF OKLAHOMA and OKLAHOMA SECRETARY OF THE ENVIRONMENT, J.D. Strong, in his capacity as the TRUSTEE FOR NATURAL RESOURCSE FOR THE STATE OF OKLAHOMA, Plaintiffs v. TYSON FOODS, INC., TYSON POULTRY, INC., TYSON CHICKEN, INC., COBB-VANTRESS, INC., AVIAGEN, INC., CAL-MAINE FOODS, INC., CAL-MAINE , FARMS, INC., CARGILL, INC., CARGILL TURKEY PRODUCTION, LLC, GEORGE'S INC., GEORGE'S FARMS, INC., PETERSON FARMS, INC., SIMMONS FOODS INC., and WILLOW BROOK FOODS, INC. Defendants.* Case No. 05-CV-329-GKF-PJC. May 14, 2009.

Provided expert witness deposition testimony in the *Matter of Robert C. Brandriff, et al. v. Dataw Island Owners' Association, Inc., et al.* Civil Action No. 9:07-3361-CWH. April 2009.

Provided expert witness deposition testimony in the *Matter of USA v. Water Supply & Storage.* November 28, 2007.

Provided expert witness deposition testimony in the *Matter of Official Committee of Unsecured Creditors v. ASARCO LLC (In re ASARCO LLC),* Case No. 05-

21207. Bunker Hill Superfund Facility/Coeur d'Alene Basin. Idaho/Washington. Settlement Hearing. October 9-12, 2007.

Provided expert witness testimony in the *Matter of Official Committee of Unsecured Creditors v. ASARCO LLC (In re ASARCO LLC)*, Case No. 05-21207. Bunker Hill Superfund Facility/Coeur d'Alene Basin. Idaho/Washington. Deposition. September 26, 2007.

Provided expert witness testimony in the *Matter of Official Committee of Unsecured Creditors v. ASARCO LLC (In re ASARCO LLC)*, Case No. 05-21207. California Gulch Superfund Site Settlement Hearing. July 27, 2007.

Provided expert witness testimony in the *Matter of Official Committee of Unsecured Creditors v. ASARCO LLC (In re ASARCO LLC)*, Case No. 05-21207. California Gulch Superfund Site Deposition. July 24, 2007.

Provided expert witness testimony in the *Matter of New Jersey Department of Environmental Protection and Acting Administrator, New Jersey Spill Compensation Fund v. Exxon Mobil Corporation, et al.* March 28, 2006.

Provided expert witness testimony in the *Matter of Fisher, et al. v. Ciba Corporation.* March 2, 2006.

Provided expert witness deposition testimony in the *Matter of Allgood, et al. v. General Motors Corporation.* February 15, 2006.

Provided expert witness deposition testimony in the *Matter of Palmisano, et al. v. Olin Corporation.* February 23, 2005.

Provided expert witness deposition testimony in the *Matter of LaBauve, et al. v. Olin Corporation.* Civil No. 03-567 in the U.S. District Court, Southern District of Alabama. February 14, 2005.

Provided expert witness deposition testimony in the *Matter of Betty Jean Cole, et al. v. ASARCO Incorporated, et al.* Case No. 03-CV-327(H) M in the U.S. District Court, Northern District of Oklahoma. October 8, 2004.

Provided expert witness deposition testimony in the *Matter of Daniels, et al. and Palmisano, et al. v. Olin Corporation, et al.* Case No. C 03-01211 RMW in the U.S. District Court, Northern District of California, San Jose Division. September 21 and 22, 2004 and February 23, 2005.

Provided expert witness testimony and participated in Daubert hearing in the *Matter of State of New Mexico v. General Electric Company, et al.* Case No. CIV 99-1254, Case No. CIV 99-1118. Consolidated by Order dated June 14, 2000. January 2004.

Provided testimony to the Public Service Commission of Wisconsin in the *Matter of "Application of Wisconsin Electric Power Company; Wisconsin Energy Corporation; and W.E. Power, LLC for a Certificate of Public Convenience and Necessity for Construction of Three Large Electric Generation Facilities, the Elm*

Road Generating Station, and Associated High Voltage Transmission Interconnection Facilities to be Located in Milwaukee and Racine Counties. Docket No. 05-CE-130. September 8, 2003.

Provided expert witness deposition testimony in the Matter of *Kellum, et al. v. Kuhlman Corporation, et al.* Civil Action No. 2001-0313 through 2001-324 in the Circuit Court of Copiah County, Mississippi. August 19 and August 20, 2003.

Provided expert witness deposition testimony in the Matter of *Susann Stalcup, Craig Lewis and Sharon Lewis v. Schlage Lock Company, Ingersoll-Rand Company and Eagle-Picher Industries, Inc.* Case No. 02-RB01188(OES). June 12, 2003.

Provided expert witness deposition testimony in the Matter of *Mary Louise Fairey, et al. v. the Exxon Corporation, Standard Oil Company, et al.* Case No. 94-CP-38-118. March 13 and June 3, 2003.

Provided expert witness deposition testimony in the Matter of *Muise/Tzannetakis, et al. v. GPU Energy.* January 22, 2003.

Provided expert witness deposition testimony in the Matter of *Andrews, et al. v. Kerr-McGee Corporation, et al.* Civil Action No. 1:00-CV-00158-B-A in the U.S. District Court, Northern District of Mississippi, Eastern Division. October 16, 2001.

Provided expert witness deposition testimony in the Matter of *State of New Mexico v. General Electric Company, et al.* Case No. CIV 99-1254, Case No. CIV 99-1118. Consolidated by Order dated June 14, 2000.

Provided expert witness deposition testimony in the Matter of *State of Montana v. Atlantic Richfield Company* in the U.S. District Court, District of Montana, Helena Division. Case No. CV-83-317-HLN-PGH. July 13, 1995. Rebuttal Testimony provided February 1, 1996.

Provided testimony on the Matter of "The Role of Contingent Valuation in Natural Resource Damage Assessment" before the U.S. House of Representatives Subcommittee on Commerce, Trade, and Hazardous Materials. June 20, 1995.

Provided testimony before the Public Utilities Commission of the State of Minnesota in the Matter of "The Quantification of Environmental Costs." Docket No. E-999/CI-93-583. Testimony in November 1994. Rebuttal in March 1995, and Sur-rebuttal in April 1995.

Testified before the National Oceanic and Atmospheric Administration (NOAA) Contingent Valuation Panel in the Matter of "Using CV to Measure Nonuse Damages: An Assessment of Validity and Reliability." August 12, 1992.

Provided testimony to Wisconsin Public Service Commission in the Matter of "Accounting for Environmental Externalities in Electric Utility Planning." November 26, 1991.

Areas of Specialization

Property Valuation

Prepared expert report that critiqued reports provided by the plaintiff's economic experts in a lawsuit alleging groundwater contamination at a Superfund site in the western U.S. Created a sophisticated hedonic property value model demonstrating that the Superfund site had no effect on residential property values.

Performed statistical analyses of changes in property values as a result of mandatory membership in a golf club.

In several states, directed projects evaluating the use of surveys to measure diminished property values, commercial and residential property values, potential damages to residential and commercial properties, and potential damages from various contaminants.

Critiqued the contingent valuation survey of a plaintiff's expert in a series of lawsuits alleging property damages caused by a wood-treating facility in Mississippi. Demonstrated that the survey is unreliable for use in litigation.

Natural Resource Damage Assessment

Assisted in NRD assessment for a process-water release (Mosaic).

Performed and critiqued habitat equivalency analysis studies.

Prepared assessment of proposed changes to DOI NRDA rules.

Developed comprehensive assessment plans for complex assessments for a wide range of sites.

Performed preliminary assessments for both oil-spill and hazardous-waste sites.

Designed state-of-the-art studies to measure potential losses for recreation and groundwater services. Studies included data-collection protocols and implementation.

Performed critical analyses of studies that used contingent valuation to measure nonuse values.

Designed and directed studies to measure potential recreation losses and to evaluate potential restoration gains.

Critiqued the transfer study used by the plaintiff's expert in a Louisiana lawsuit seeking restoration funds to convert floatant freshwater marsh habitat to uplands. Provided an alternative estimate of the value of the wetlands.

Benefit/Cost Analysis

Prepared comments on EPA's Proposed Survey to Estimate the Potential Benefits of Alternative Cooling Water Intake Policies for the Utility Water Act Group. Prepared in conjunction with NERA Consulting Group. September 2010.

Prepared comments to Office of Management and Budget on potential revisions to benefit cost analyses of governmental regulations for the Utility Water Act Group.

Prepared comments on economic issues in EPA's proposed 316(b) regulations for The Utility Water Act Group.

Directed a benefit analysis of technology-based effluent guidelines for municipal and industrial dischargers.

Directing projects to measure benefits of 316(b) regulatory alternatives for several utility clients

Served on peer review committee associated with benefits transfer data needs for Environment Canada.

Served as peer reviewer on benefits transfer for Ontario Ministry of the Environment.

Directed a feasibility study of using benefit-cost techniques to assist in the planning of estuaries cleanup. The study used case studies of two estuaries: the Albemarle and Pamlico Sounds.

Prepared a handbook on benefit-cost assessment for water programs that included chapters on measuring benefits and costs, selecting a discount rate, and assembling a benefit-cost assessment.

Compared alternative approaches for estimating the recreation and related benefits of the Monongahela River in Pennsylvania. Developed a survey questionnaire to measure recreation, user, option, and existence benefits for different levels of water quality. The survey design enabled a comparison of bidding games, direct-question, and contingent-ranking techniques for measuring benefits. Used clustered sampling techniques to sample 393 households, and compared the direct survey results with benefits estimates derived from an indirect estimation technique.

Survey Design and Management

During the past 25 years, designed and managed large-scale surveys. Experienced in using bidding games, direct-question, contingent-ranking, and discrete-choice techniques for measuring benefits of natural resource and environmental policies. Directed focus groups to determine appropriate terminology, to evaluate the effectiveness of alternative visual aids used in the

surveys, and to assess the various survey issues. Developed surveys to evaluate the following:

- Health benefits from reduced cardiac and respiratory morbidity using conjoint analysis
- Market penetration for “green” products using conjoint analysis
- Customer willingness to pay for “greener” electricity using conjoint analysis
- The role of quality-of-life measures in the benefits of improved life extension
- Natural resource damages
- Risk-communication effectiveness
- Radon risk perceptions and willingness to pay to reduce perceived risks
- Benefits of hazardous waste management regulations
- Risk perceptions related to the proposed siting of a nuclear waste repository and willingness to pay to reduce those perceived risks
- Recreation benefits demand
- Recreation, user, and option benefits for different levels of water quality

Environmental Costing

Provided analysis and testimony for the eastern Wisconsin utilities in hearings on environmental costing before the Wisconsin Public Service Commission.

Estimated the environmental externality costs of resource planning options for the eastern Wisconsin utilities and for Northern States Power.

Participated in environmental costing workshop and served on peer review committee for Ontario Hydro.

Health Economics

Conducted focus groups and used verbal protocols to develop stated-preference conjoint survey questionnaires.

Conducted large-scale stated-preference conjoint survey to measure benefits of reduced cardiac and respiratory morbidity.

Designed/conducted pilot study of quality of life and enhanced longevity using conjoint stated-preference methods.

Designed and distributed radon information materials that were sent to 2,000 homeowners in the state of New York who had their homes tested for radon. Supervised interviews with homeowners, sequenced over a nine-month to two-year period, to elicit their perceptions of radon risks and tracked any expenditure decisions to reduce these risks. The expenditures were used to

estimate a willingness-to-pay measure of the value of reductions in radon risks. The research design also evaluated the effectiveness of an information policy for reducing radon risks.

Developed and evaluated alternative approaches for encouraging Maryland homeowners to test for radon. Developed and pretested risk communication materials that ranged from radio public service announcements to public display posters and brochures. Used a three-community experimental design with 1,500 baseline and follow-up interviews in each community to measure effectiveness.

Professional Associations

- American Economic Association
- Association of Environmental and Resource Economists (AERE)
- Associate Member, Appraisal Institute
- Member of Nominating Committee for AERE, 1983 and 1986

Honors and Awards

- Recipient, Research Triangle Institute Professional Development Award, 1985
- Nominated for Outstanding Young Man of Rolla, Missouri, 1979
- Outstanding Teacher Award, University of Missouri at Rolla, 1977 to 1979
- Scholar-Diplomat, U.S. State Department, 1978
- Graduated *cum laude*, Stetson University, 1972

Professional Leadership

- Vice President, Association of Environmental and Resource Economists, 1992 to 1994
- Associate Editor, *International Journal of Energy Studies*, 1989 to 1993
- Associate Editor, *Journal of Environmental Economics and Management*, 1992 to 1994
- Associate Editor, *Water Resources Research*, 1984 to 1987

Journals and Book Reviews

- *American Economic Review*

- *Review of Economics and Statistics*
- *Land Economics*
- *Journal of Environmental Economics and Management*
- *Growth and Change*
- *American Journal of Agricultural Economics*
- *Southern Economics Journal*
- *Mansfield's Principles of Microeconomics*
- *Marine Resource Economics*
- *National Science Foundation*
- *Journal of the American Statistical Association*

Publications

- Gard, Nicholas W. and William H. Desvousges. 2013. "Technical and economic issues and practices in ELD application." In *The EU Environmental Liability Directive: A Commentary*, Lucas Bergkamp and Barbara J. Goldsmith, Eds. Oxford, UK: Oxford University Press.
- Desvousges, William, Kristy Mathews, and Kenneth Train. 2012. "Adequate Responsiveness to Scope in Contingent Valuation." *Ecological Economics* 84: 121-128.
- Desvousges, William, Johnston, F. Reed, Richard W. Dunford, Kevin J. Boyle, Sarah P. Hudson, and K. Nicole Wilson. 2010. *Measuring Nonuse Damages Using Contingent Valuation: An Experimental Evaluation of Accuracy* (2nd. Ed). Research Triangle Park, NC: RTI International Press.
- MacNair, D.J. and W.H. Desvousges. 2007. "The Economics of Fish Consumption Advisories: Insights from Revealed and Stated Preference Data." *Land Economics* 83(4): 600-616.
- Mathews, K.E., M.L. Freeman, and W.H. Desvousges. 2006. "How and How Much? The Role of Information in CE Questionnaires." In *Valuing Environmental Amenities Using Stated Choice Studies*, Barbara Kanninen, ed. Boston: Kluwer Academic Publishers.
- Kinnell, J.C., M.F. Bingham, A.F. Mohamed, W.H. Desvousges, T.B. Kiler, E.K. Hastings, and K.T. Kuhns. 2006. "Estimating Site-Choice Decisions for Urban Recreators." *Land Economics* 82(2):257-272.
- Dunford, R.W., T.C. Ginn, and W.H. Desvousges. 2004. "The Use of Habitat Equivalency Analysis in Natural Resource Damage Assessments." *Ecological Economics* 48(1):49-70.

- Mathews, K.E., and W.H. Desvousges. 2003. "Stigma Claims and Survey Reliability: Lessons Learned from Natural Resource Damages Litigation." *Journal of Forensic Economics* 16(1):23–36.
- Iannuzzi, T.J., D.F. Ludwig, J.C. Kinnell, J.M. Wallin, W.H. Desvousges, and R.W. Dunford. 2002. *A Common Tragedy: History of an Urban River*. Amherst, MA: Amherst Scientific Publishers.
- Mathews, K.E., K.J. Gribben, and W.H. Desvousges. 2002. "Integration of Risk Assessment and Natural Resource Damage Assessment: A Case Study of Lavaca Bay." In *Human and Ecological Risk Assessment: Theory & Practice*, Dennis J. Paustenbach, ed. New York: John Wiley and Sons.
- Johnson, F.R., R.W. Dunford, W.H. Desvousges, and H.S. Banzhaf. 2001. "The Role of Knowledge in Assessing Nonuse Damages: A Case Study of the Lower Passaic River." *Growth and Change* 32(Winter):43–68.
- Smith, V. Kerry, Donald H. Taylor, Jr., Frank A. Sloan, F. Reed Johnson, and William H. Desvousges. 2001. "Do Smokers Respond to Health Shocks?" *The Review of Economics and Statistics* 83(4):675–687.
- Desvousges, W.H., and J.C. Lutz. 2000. "Compensatory Restoration: Economic Principles and Practice." *Arizona Law Review* 42(2):411–432.
- Johnson, F.R., M.R. Banzhaf, and W.H. Desvousges. 2000. "Willingness to Pay for Improved Respiratory and Cardiovascular Health: A Multiple-Format Stated-Preference Approach." *Health Economics* 9:295–317.
- Payne, J.W., D.A. Schkade, W.H. Desvousges, and C. Aultman. 2000. "Valuation of Multiple Environmental Programs." *Journal of Risk and Uncertainty* 21(1):95–115.
- Desvousges, W.H., F.R. Johnson, and H.S. Banzhaf. 1998. *Environmental Policy Analysis With Limited Information: Principles and Applications to the Transfer Method*. Cheltenham, UK: Edward Elgar.
- Johnson, F.R., W.H. Desvousges, M.C. Ruby, D. Stieb, and P. De Civita. 1998. "Eliciting Stated Health Preferences: An Application to Willingness to Pay for Longevity." *Medical Decision Making* 18(2):57–67.
- Johnson, F.R., and W.H. Desvousges. 1997. "Estimating Stated Preferences With Rated-Pair Data: Environmental, Health, and Employment Effects of Energy Programs." *Journal of Environmental Economics and Management* 34(1):79–99.
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